

**REMARKS**

The Office Action of May 17, 2006 has been received and reviewed.

Claims 1-16 and 23-28 are currently pending and under consideration in the above-referenced application, each standing rejected.

Reconsideration of the above-referenced application is respectfully requested.

**Claim Objections**

An objection has been raised against claims 24-28 under 37 C.F.R. § 1.75(c) because each of these claims recite methods, whereas the claim from which they depend – independent claim 23 – is directed to a system. Claims 24-28 have been amended to further limit the system recited in independent claim 23. Accordingly, withdrawal of the 37 C.F.R. § 1.75(c) objection to claims 24-28 is respectfully solicited.

**Obviousness-Type Double Patenting Rejection**

Claims 1-16 and 23-28 stand rejected under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over claims 1 through 33 of U.S. Patent Application 10/705,250.

Without conceding anything, this issue will be addressed upon resolution of all remaining issues in the above-referenced application.

**Rejections under 35 U.S.C. § 102**

Claims 1-4, 7, 8, and 12-15 are rejected under 35 U.S.C. § 102.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference which qualifies as prior art under 35 U.S.C. § 102. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Bradbury

Claims 1-3 have been rejected under 35 U.S.C. § 102(e) for being drawn to subject matter that is allegedly anticipated by the subject matter described in U.S. Patent Application Publication 2002/0007294 of Bradbury et al. (hereinafter “Bradbury”).

Bradbury describes a system in which patient data is transmitted to a three-dimensional printing apparatus by way of a computer network to facilitate fabrication of a biomedical device.

Bradbury does not expressly or inherently describe that the system may include a plurality of programmed material consolidation sites. Rather, the disclosure of Bradbury is limited to a system on which patient data and design data may be processed, evaluated, and eventually transmitted to a single three-dimensional printing apparatus. As such, Bradbury does not anticipate each and every element of independent claim 1, as would be required to maintain the 35 U.S.C. § 102(e) rejection of independent claim 1.

Claims 2 and 3 are both allowable, among other reasons, for respectively depending directly and indirectly from independent claim 1, which is allowable.

Claim 2 is additionally allowable since the description of Bradbury is limited to a computer network that communicates with a single three-dimensional printing apparatus. Thus, Aronsatein does not expressly or inherently describe a material consolidation system that is common to a plurality of programmed material consolidation sites.

Claim 3, which depends directly from claim 2, is also allowable since Bradbury lacks any express or inherent description of a location control element that is common to a plurality of programmed material consolidation sites.

Aronsatein

Claims 1-4, 7, 8, and 12-15 stand rejected under 35 U.S.C. § 102(b) for reciting subject matter that is purportedly anticipated by the disclosure of U.S. Patent 3,889,355 to Aronsatein et al. (hereinafter “Aronsatein”).

The description of Aronsatein relates to a system for conveying individual semiconductor wafers from one semiconductor device fabrication process sector to another. Aronsatein provides examples of semiconductor device fabrication process sectors, including an

oxidation sector, a source and drain implantation sector, a gate oxidation sector, a pattern generating unit, a metallization sector, and a sintering sector. Col. 23, lines 59-66. Each wafer may be identified and moved under control of a computer. Col. 24, line 17, to col. 26, line 4.

By its plain language, the phrase “programmed material consolidation” refers to processes in which material is consolidated in accordance with or under control of a program.

Conventional semiconductor device fabrication processes do not include “programmed material consolidation.” A standard photolithography process is one example of a conventional semiconductor device fabrication process the Examiner has inappropriately attempted to identify as a “programmed material consolidation” process. *See, e.g.*, Final Office Action, pages 9 and 10. One of ordinary skill in the pertinent art would readily understand, however, that photolithography processes, in which material is consolidated by exposing a resist through a reticle and then using chemical developers, is not “programmed material consolidation,” as no program is required to effect the basic acts of the photolithography process.

Furthermore, one of ordinary skill in the pertinent art would also readily understand that the consolidation of material films in deposition chambers does not include consolidation of the material in accordance with or under control of a program; rather, in deposition chambers, material consolidates in a nonspecific manner (*i.e.*, as a film) due to a combination of the chemical reactants that are introduced into the chamber and the conditions (*e.g.*, temperature, pressure, etc.) that are present in the chamber.

Nor does any other conventional semiconductor device fabrication process include “programmed material consolidation.”

The semiconductor device fabrication system described in Aronsatein merely includes a component for conveying individual semiconductor wafers from one *conventional* semiconductor device fabrication process sector to another.

In view of the foregoing, it is apparent that Aronsatein lacks any express or inherent description of a programmed material consolidation system that includes a plurality of programmed material consolidation sites, as recited in independent claim 1, as amended and presented herein. As such, it is respectfully submitted that, under 35 U.S.C. § 102(b), the subject

matter recited in amended independent claim 1 is allowable over the subject matter described in Aronsatein.

Each of claims 2-4, 7, 8, and 12-15 is allowable, among other reasons, for depending directly or indirectly from amended independent claim 1, which is allowable.

Claim 2 is additionally allowable since the description of Aronsatein is limited to a substrate conveyor system that is common to a plurality of conventional semiconductor device fabrication chambers. As such, Aronsatein does not expressly or inherently describe a common component that comprises a material consolidation system.

Claim 3, which depends directly from claim 2, is also allowable since Aronsatein lacks any express or inherent description of a location control element that is common to a plurality of programmed material consolidation sites.

Claim 4 depends from claim 3 and is additionally allowable since Aronsatein neither expressly nor inherently describes a location control element that is configured to direct consolidating energy to a selected programmed material consolidation site. Again, the description of Aronsatein is limited to a substrate conveyor system for use with conventional semiconductor device fabrication chambers.

Claim 7 is further allowable because Aronsatein includes no express or inherent description of a cleaning component that is common to a plurality of programmed material consolidation sites.

Withdrawal of the 35 U.S.C. § 102 rejections of claims 1-4, 7, 8, and 12-15 is respectfully solicited, as is the allowance of each of these claims.

**Rejections under 35 U.S.C. § 103(a)**

Claims 1-16 and 23-28 have been rejected under 35 U.S.C. § 103(a).

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally

available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Grigg in View of Tischler

Claims 1-5, 7, 8, and 10-16 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is assertedly unpatentable over the subject matter taught in U.S. Patent 6,337,122 to Grigg et al. (hereinafter "Grigg"), in view of teachings from U.S. Patent Application Publication 2003/0114016 of Tischler (hereinafter "Tischler").

Independent claim 1 recites a programmed material consolidation system that includes a plurality of fabrication sites, as well as at least one common component useful with more than one of the plurality of fabrication sites.

The teachings of Grigg are limited to a programmed material consolidation system that includes a single fabrication site, not a plurality of fabrication sites. Thus, the components of that system are useful with only one fabrication site. The programmed material consolidation system disclosed in Grigg is a stereolithography apparatus that includes a platen, upon which an object is to be formed, that may be incrementally lowered into a reservoir that contains liquid photopolymer and that is configured to maintain a surface of the liquid photopolymer at a constant, or fixed, level. Col. 9, line 44, to col. 10, line 40.

Tischler teaches a wafer carrier that may be used in conjunction with process tools such as an "epitaxial thin film deposition reactor." Paragraph [0007]. Specifically, the wafer carrier of Tischler, which is configured to be assembled with a recess of a susceptor of an epitaxial thin film deposition reactor, includes one or more receptacles that will receive wafers of different sizes than the receptacle of the susceptor is configured to receive. Paragraphs [0031] and [0033]. The wafer carriers of Tischler act as adapters that allow epitaxial thin film deposition reactors to

hold substrates with shapes or dimensions that differ from the substrate shapes or dimensions that the reactors were designed to contain. Paragraph [0008].

Notable examples of expitaxial thin film deposition reactors include sputtering chambers and other physical vapor deposition (PVD) reactors, chemical vapor deposition (CVD) reactors, and atomic layer deposition (ALD) reactors. As epitaxial thin film deposition chambers deposit material indiscriminately, rather than in accordance with a program, epitaxial thin film deposition chambers are not capable of effecting programmed material consolidation processes.

It is respectfully submitted that Grigg and Tischler do not provide teachings that support a *prima facie* case of obviousness against any of claims 1-5, 7, 8, or 10-16.

In particular, it is respectfully submitted that, without the benefit of hindsight that has been made available to the Office by the claims and disclosure of the above-referenced application, one of ordinary skill in the art wouldn't have been motivated to immerse the wafer carrier of Tischler within the liquid-filled chamber of a programmed material consolidation apparatus of the type disclosed in Grigg. Specifically, Tischler does not provide any motivation to use the support thereof anywhere other than in a reactor for depositing epitaxial thin films. Moreover, the platform 90 of Grigg includes a planar surface that may receive a substrate of any size, provided the dimensions of the substrate are less than the corresponding dimensions of the reservoir within which the platform 90 is located. Thus, neither Grigg nor Tischler provides one of ordinary skill in the art with any reason to expect the platform 90 of Grigg to be deficient in its ability to hold substrates of various sizes.

Moreover, assuming, *arguendo*, that the carrier of Tischler were used on platform 90 of the apparatus disclosed in Grigg, a technique for securing the carrier, such as the substrate securing process described at col. 8, line 55, to col. 9, line 2, would also have to be devised. As Grigg clearly teaches that one or more substrates could be directly secured to platen 90, the use of the carrier of Tischler with the apparatus disclosed in Grigg would only unnecessarily complicate the process of securing one or more substrates to platen 90.

Furthermore, Tischler lacks any teaching or suggestion that the wafer carrier disclosed therein may be used to transport wafers between a plurality of different sites. Rather, the

teachings of Tischler are limited to use of the wafer carrier within a chamber of an epitaxial thin film deposition apparatus.

For these reasons, neither Grigg nor Tischler would have provided one of ordinary skill in the art with any motivation to combine their teachings before the earliest date to which a claim for priority has been made in the above-referenced application. Therefore, the teachings of Grigg and Tischler do not support a *prima facie* case of obviousness against any of claims 1-5, 7, 8, or 10-16.

As such, under 35 U.S.C. § 103(a), the subject matter recited in claims 1-5, 7, 8, and 10-16 is allowable over the subject matter taught in Tischler and Huang.

Grigg, Tischler, and Yamamoto

Claims 6, 9, and 23-28 stand rejected under 35 U.S.C. § 103(a) for being drawn to subject matter that is allegedly unpatentable over teachings from Grigg, in view of the subject matter taught in Tischler and, further, in view of teachings from U.S. Patent 5,151,813 to Yamamoto et al. (hereinafter “Yamamoto”).

Claims 6 and 9 are both allowable, among other reasons, for depending indirectly from claim 1, which is allowable.

Claim 9 is additionally allowable since none of Grigg, Tischler, or Yamamoto teaches or suggests a rotary feed system for handling substrates, let alone a programmed material consolidation system that includes a rotary feed system associated with more than one fabrication site.

Additionally, it is respectfully submitted that a *prima facie* case of obviousness has not been established against any of claims 6, 9, or 23-28 because Yamamoto includes no teaching or suggestion that remedies the above-mentioned deficiency in motivation for one of ordinary skill in the art to have combined the teachings of Grigg and Tischler in the asserted manner.

Furthermore, with respect to the subject matter to which independent claim 23 is directed, none of Grigg, Tischler, or Yamamoto teaches or suggests a programmed material consolidation

system that includes “means for selectively directing consolidating energy *toward at least two distinct fabrication sites . . .*” (emphasis supplied), as recited in independent claim 23. Therefore, it is respectfully submitted that, under 35 U.S.C. § 103(a), the subject matter to which independent claim 23 is allowable over the teachings of Grigg, Tischler, and Yamamoto.

Claims 24-28 are each allowable, among other reasons, for depending directly or indirectly from independent claim 23, which is allowable.

Claim 25 is also allowable because none of Grigg, Tischler, or Yamamoto teaches or suggests a programmed material consolidation system that includes “means for removing . . . at least one substrate from a first fabrication site . . . as consolidating energy is directed toward a second fabrication site . . .”

Claim 27 is additionally allowable since Grigg, Tischler, and Yamamoto each lack any teaching or suggestion of means configured to redirect consolidating energy to a first fabrication site after consolidating energy has been directed toward a distinct, second fabrication site.

#### Caccoma in View of Aronsatein

Claims 23-28 have been rejected under 35 U.S.C. § 103(a) for reciting subject matter which is assertedly unpatentable over the subject matter taught in U.S. Patent 4,027,246 to Caccoma et al. (hereinafter “Caccoma”), in view of teachings from Aronsatein.

The system disclosed in Caccoma is much like that of Aronsatein, with the additional of storage sites for semiconductor wafers.

Both Caccoma and Aronsatein lack any teaching or suggestion of a system that includes “means for selectively directing consolidating energy toward at least two distinct fabrication sites of a programmed material consolidation system . . .,” as recited in independent claim 23. More specifically, neither Caccoma nor Aronsatein teaches or suggests means for selectively consolidating energy.” Further, neither Caccoma nor Aronsaten includes any teaching or suggestion of a programmed material consolidation system. Rather, the teachings of Caccoma and Aronsatein are limited to systems that include conventional semiconductor device fabrication chambers, which, as explained above, are not capable of material consolidation in accordance with a program, or programmed material consolidation. Thus, under 35 U.S.C. § 103(a), the



subject matter recited in independent claim 23 is allowable over the teachings of Cacomma and Aronsatein.

Claims 24-28 are each allowable, among other reasons, for depending directly or indirectly from independent claim 23, which is allowable.

Claim 24 is further allowable since Cacomma and Aronsatein both lack any teaching or suggestion of a system with means configured to direct consolidating energy toward at least one substrate.

Claim 25 is also allowable because neither Cacomma nor Aronsatein teaches or suggests a programmed material consolidation system that includes “means for removing . . . at least one substrate from a first fabrication site . . . as consolidating energy is directed toward a second fabrication site . . .”

Claim 27 is additionally allowable since Cacomma and Aronsatein both lack any teaching or suggestion of means configured to redirect consolidating energy to a first fabrication site after consolidating energy has been directed toward a distinct, second fabrication site.

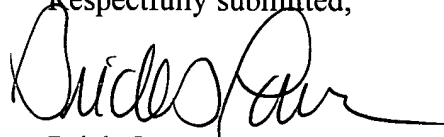
Claim 28 is further allowable because neither Cacomma nor Aronsatein teaches or suggests a system with means for selectively directing a beam of ultraviolet radiation.

It is respectfully requested that the 35 U.S.C. § 103(a) rejections of claims 1-16 and 23-28 be withdrawn and that each of these claims be allowed.

**CONCLUSION**

It is respectfully submitted that each of claims 1-16 and 23-28 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,



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